



In the claims

1-36. (Cancelled)

37. (Currently amended) A method of inhibiting bone resorption in a mammal in need thereof comprising administering to the mammal an antagonist antibody or binding fragment thereof which binds to an osteoprotegerin binding protein ~~from residues 1 to 317 as shown in Figure 4 of~~ (SEQ ID NO:39).

38. (Cancelled)

2 39. (Currently amended) The method of Claim 37 wherein the antibody is a monoclonal antibody or binding fragment thereof.

3 40. (Currently amended) The method of Claim 37 wherein the antibody is a recombinant antibody or binding fragment thereof.

4 41. (Currently amended) The method of Claim 40 wherein the antibody or fragment is a chimeric antibody or a CDR-grafted antibody or a binding fragment thereof.

5 42. (Currently amended) The method of Claim 41 wherein the antibody is a human antibody or binding fragment thereof.

6 43. (Previously presented) The method of Claim 42 wherein the antibody is prepared by immunization of a transgenic animal capable of producing human antibodies.

7 44. (Currently amended) The method of Claim 43 wherein the antibody or binding fragment thereof binds to an epitope on the extracellular domain or to an epitope on a fragment of the extracellular domain of an osteoprotegerin binding protein.

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~~45~~. (Previously presented) The method of Claim ~~44~~⁷ wherein the epitope comprises the BB' loop of an osteoprotegerin binding protein.

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~~46~~. (Previously presented) The method of Claim ~~44~~⁷ wherein the epitope comprises the EF loop of an osteoprotegerin binding protein.

¹⁰
~~47~~. (Currently amended) The method of Claim ~~37~~¹ wherein the antibody or binding fragment further comprises a composition comprising a pharmaceutically acceptable diluent, carrier, solubilizer, emulsifier, preservative and/or adjuvant.

¹¹
¹~~37~~, ²~~39~~, ³~~40~~, ⁴~~41~~, ⁵~~42~~, ⁷~~44~~ or ¹⁰~~47~~ (Currently amended) The method of any of Claims further comprising administering one or more of a bone morphogenic factor ~~(BMP 1 to BMP 12)~~, transforming growth factor- β , a transforming growth factor- β family member, a fibroblast growth factor ~~(FGF 1 to FGF 10)~~, an interleukin-1 inhibitor, a TNF α inhibitor, a parathyroid hormone, an E series prostaglandin, a bisphosphonate, or a bone-enhancing mineral.

¹²
¹~~37~~, ²~~39~~, ³~~40~~, ⁴~~41~~, ⁵~~42~~, ⁷~~44~~ or ¹⁰~~47~~ (Currently amended) The method of any of Claims wherein bone resorption is associated with a bone disease selected from ~~the group consisting of~~ osteoporosis, osteomyelitis, hypercalcemia, osteopenia brought on by surgery or steroid administration, Paget's disease, osteonecrosis, bone loss due to rheumatoid arthritis, periodontal bone loss, osteopenia due to immobilization, prosthetic loosening and osteolytic metastasis.

¹³
~~50~~. (Currently amended) The method of Claim ~~37~~¹ wherein the antibody or binding fragment thereof binds to a membrane associated form of osteoprotegerin binding protein.

¹⁴
51. (Currently amended) The method of Claim 37 wherein the antibody or binding fragment thereof binds to a soluble osteoprotegerin binding protein.

See ex. amend.
52. (Currently amended) A method of inhibiting osteoclastogenesis in a mammal comprising administering to the mammal an antagonist antibody or binding fragment thereof which binds to an osteoprotegerin binding protein ~~from residues 1-317 as shown in Figure 4 of (SEQ ID NO:39).~~

53. (Cancelled)

¹⁶
54. (Currently amended) The method of Claim ¹⁵~~52~~ wherein the antibody is a monoclonal antibody or binding fragment thereof.

¹⁷
55. (Currently amended) The method of Claim ¹⁵~~52~~ wherein the antibody is a recombinant antibody or binding fragment thereof.

¹⁸
56. (Previously presented) The method of Claim ¹⁵~~52~~ wherein the antibody is a chimeric antibody or a CDR-grafted antibody.

¹⁹
57. (Currently amended) The method of Claim ¹⁵~~52~~ wherein the antibody is a human antibody or binding fragment thereof

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58. (Previously presented) The method of Claim ¹⁹~~57~~ wherein the antibody is prepared by immunization of a transgenic animal capable of producing human antibodies.

²¹
59. (Currently amended) The method of Claim ¹⁵~~52~~ wherein the antibody or binding fragment thereof binds to an epitope on the extracellular domain or to an epitope on a fragment of the extracellular domain of an osteoprotegerin binding protein.

²²
60. (Previously presented) The method of Claim ²¹59 wherein the epitope comprises the BB' loop of an osteoprotegerin binding protein.

²³
61. (Previously presented) The method of Claim ²¹59 wherein the epitope comprises the EF loop of an osteoprotegerin binding protein.

²⁴
62. (Currently amended) The method of Claim ¹⁵52 wherein the antibody or binding fragment thereof binds to a membrane associated form of osteoprotegerin binding protein.

²⁵
63. (Currently amended) The method of Claim ¹⁵52 wherein the antibody or binding fragment thereof binds to a soluble osteoprotegerin binding protein.

²⁶
64. (Currently amended) The method of Claim ¹⁵52 wherein the antibody or binding fragment further comprises a composition comprising a pharmaceutically acceptable diluent, carrier, solubilizer, emulsifier, preservative and/or adjuvant.

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^{15 16 17 18 19 21 24 25 26}
65. (Currently amended) The method of any of Claims 52, 54, 55, 56, 57, 59, 62, 63, or 64 further comprising administering one or more of a bone morphogenic factor (~~BMP-1 to BMP-12~~), transforming growth factor- β , a transforming growth factor- β family member, a fibroblast growth factor (~~FGF-1 to FGF-10~~), an interleukin-1 inhibitor, a TNF α inhibitor, a parathyroid hormone, an E series prostaglandin, a bisphosphonate, or a bone-enhancing mineral.

²⁸
^{15 16 17 18 19 21 24 25 26}
66. (Currently amended) The method of any of Claims 52, 54, 55, 56, 57, 59, 62, 63, or 64 wherein osteoclastogenesis is associated with a condition selected from ~~the group consisting of~~ osteoporosis, osteomyelitis, hypercalcemia, osteopenia brought on by surgery or steroid administration, Paget's disease,

osteonecrosis, bone loss due to rheumatoid arthritis, periodontal bone loss, osteopenia due to immobilization, prosthetic loosening and osteolytic metastasis.

²⁹
15 ~~67~~. (Previously presented) The method of Claims ~~37~~ or ~~52~~ wherein the mammal is a human.

*sub
ex. amend.*
~~68~~. (Currently amended) The method of Claims 37 or 52 wherein the antibody is raised against an osteoprotegerin binding protein comprising the amino acid sequence ~~as shown in Figure 4 of (SEQ ID NO:39) from residues 1-317~~ or an immunogenic fragment thereof.

³¹
~~69~~. (Currently amended) The method of Claim ~~37~~ or ~~52~~ wherein the antibody is raised against an osteoprotegerin binding protein comprising the amino acid sequence ~~as shown in Figure 4 of (SEQ ID NO:39) from residues 69-317~~.